No. 9000014

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Ohio Agricultural Research and Development Center
Ohio State University and USDA–ARS

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM,* TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS AS DESIGNATED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

(*Waived, except that this waiver shall not apply to breeder seed, foundation seed, labeling requirements, and blending limitations.)

SOYBEAN
'Sprite 87'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 28th day of February in the year of our Lord one thousand nine hundred and ninety-two.

Attest:

Kenneth K. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Edward Madigan
Secretary of Agriculture

APPROVAL EXPIRES 2-28-88

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

FORM APPROVED: OMB NO. 0581-0055

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)
Ohio Agricultural Research and Development Center and USDA-ARS

2. TEMPORARY DESIGNATION
HC Sprite BC

3. VARIETY NAME
Sprite 87

4. ADDRESS *(Street and No. or R.F.D. No., City, State, and Zip Code)*
Ohio Agricultural Research and Development Center, Wooster, OH 44691

5. PHONE *(Include area code)*
216-263-3875

FOR OFFICIAL USE ONLY

PVPO NUMBER
9000014

6. GENUS AND SPECIES NAME
Glycine max

7. FAMILY NAME *(Botanical)*
Leguminosae

FILING
DATE: Oct. 16 1989
TIME: 1:45 ☐ A.M. ☑ P.M.

8. KIND NAME
Soybeans

9. DATE OF DETERMINATION
2/15/87

FEES RECEIVED
AMOUNT FOR FILING: $ 1800.00 + 350.00
DATE: Oct. 16 1989; Nov. 24, 1989
AMOUNT FOR CERTIFICATE: $ 250.00
DATE: Jan. 13, 1992

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Agricultural Experiment Station

11. IF INCORPORATED, GIVE STATE OF INCORPORATION

12. DATE OF INCORPORATION

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Dr. Richard L. Cooper, Department of Agronomy
Ohio Agricultural Research and Development Center
Wooster, OH 44691
PHONE *(Include area code)*: 216-263-3875

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED
- a. ☒ Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- b. ☒ Exhibit B, Novelty Statement.
- c. ☒ Exhibit C, Objective Description of Variety *(Request form from Plant Variety Protection Office.)*
- d. ☐ Exhibit D, Additional Description of Variety.
- e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act.)* ☒ Yes *(If "Yes," answer items 16 and 17 below)* ☐ No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☒ Yes ☐ No

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☒ Foundation ☒ Registered ☒ Certified

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ Yes *(If "Yes," give date)*
☒ No

19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES ?
USA January 1, 1989
☒ Yes *(If "Yes," give names of countries and dates)*
☐ No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT
Richard L Cooper
DATE
May 3, 1989

SIGNATURE OF APPLICANT
DATE

FORM LS-470 (3-86) *Edition of 7-84 obsolete.*

900014

Sprite 87 Exhibit A

Origin and Breeding History of the Variety

Sprite 87 soybean [*Glycine max* (L.) Merr.] is a Rps_1^k Phytophthora resistant version of Sprite developed by backcrossing the Rps_1^k gene from Williams 82 into Sprite. The initial cross between Sprite and Williams 82 was made in 1979 by R. L. Cooper, USDA-ARS Soybean Breeder, at the Ohio Agricultural Research and Development Center, Wooster. Using Sprite as the recurrent parent, Phytophthora resistant (Race 5) F_1 and BCF_1 plants wee backcrossed to Sprite for six generations to obtain the Sprite genotype containing the Rps_1^k gene. This procedure is outlined below:

1979 Field-Initial cross of Sprite x Williams 82
1979 Fall Greenhouse-Sprite X F_1
1980 Spring Greenhouse-Sprite X resistant BC_1F_1
1980 Fall Greenhouse-Sprite X resistant BC_2F_1
1981 Spring Greenhouse-Sprite X resistant BC_3F_1
1981 Field-Sprite X resistant BC_4F_1
1981 Fall Greenhouse-Sprite X resistant BC_5F_1
1982 Spring Greenhouse-Planted 18 BC_6F_1s

The 18 BC_6F_1 plants were single plant threshed and their progeny (20 F_2 plants per F_1) were screened against Race 5 of Phytophthora root rot in the 1982 Summer Greenhouse to identify resistant BC_6F_2 plants. The resistant (R_) plants were progeny tested in the BC_6F_3 in the 1983 Spring Greenhouse to identify homozygous resistant (RR) BC_6F_2 plants. Twenty-two homozygous resistant BC_6F_2-derived lines were identified and planted in the 1983 Field in 10-foot, 1-row plots and 1 replication for preliminary yield testing. All 22 lines were advanced for yield testing in 4-row, 20-foot plots and two replications in 1984. The 13 highest yielding lines, similar in other agronomic characteristics to Sprite, were advanced for a second year of yield testing in replicated 4-row plots in 1985. The 6 highest yielding F_2-derived lines were bulked to form HC Sprite BC. HC Sprite BC was entered in the Uniform Regional Test III, Northern States in 1986 and was yield tested, in comparison with the recurrent parent, Sprite, in Iowa, Illinois, Indiana, Kansas, Kentucky, Missouri, Nebraska, New Jersey, Ohio, Pennsylvania, South Dakota and Ontario, Canada. Breeder's Seed increase (1 hectare) of HC Sprite BC was also planted by Ohio Foundation Seeds at Croton, OH in 1986 to produce 2700 kg of seed in anticipation of potential release. HC Sprite BC was jointly released by the Ohio Agricultural Research and Development Center and ARS in 1987. HC Sprite BC was named Sprite 87 in accordance with Regional policy to identify the year of release of Phytophthora resistant backcross version of an existing variety. Publicity was released September 1, 1988.

Variants observed during the development of this variety were few. In the 1986 increase of Breeder's Seed no variants were observed except for those few that might be traced back to slight admixtures resulting from incomplete combine clean out and these plants were rogued out. Variants resulting in future generations should be within allowable Certification maximums. Sprite 87 is a white flowered variety but may contain a variant of upto 0.5% purple flowers

Sprite 87 Exhibit B

Novelty Statement and Botanical Description of the Variety

Sprite 87 is a determinate (dt_1dt_1) semidwarf variety of mid-Group III maturity. Sprite 87 can be distinguished from all other Group III indeterminate (Dt_1Dt_1) varieties by its determinate growth habit which results in an abrupt termination in further plant height increase shortly after the onset of flowering and a terminal cluster of flowers and pods. It can be distinguished from all other determinate semidwarf varieties, except Gnome 85 and Hobbit 87 by its resistance to multiple races of Phytophthora root rot (races 1 thru 10, 13, 14, 15, 17, 18, 21 and 22), due to the presence of the Rps_1^k gene. It can be distinguished from Gnome 85 by its later maturity (5 days later than Gnome 85) and white flowers. Gnome 85 has purple flowers. Sprite 87 can be distinguished from Hobbit 87 by its more bushy plant type, larger seed size (16.7 gms versus 15.6 gms/100 seed) and the presence of high peroxidase activity in the seed coat compared to absence (or very low) peroxidase activity in the seed coat of Hobbit 87.

Like all determinate semidwarf varieties, Sprite 87 was developed specifically for high yield environments where early lodging frequently limits the yield of taller indeterminate varieties. Because of its smaller plant type and greater lodging resistance, Sprite 87 is especially responsive to narrow rows (solid-seeding in 17- to 25-cm row widths) and high seeding rates (562,000 to 750,000 seed/hectare in 17-cm rows). Although Sprite 87 will yield well in 75-cm row widths, it is recommended for solid-seeding to maximize yields.

Sprite 87 has white flowers, tawny (or brown) pubescence, tan pods and yellow seeds with a black hilum

Most Similar Variety

The variety most similar to Sprite 87 is Sprite but Sprite 87 can readily be distinguished from Sprite by its resistance to multiple races of Phytophthora root rot. Sprite has no known resistance to specific races of Phytophthora root rot.

Uniform Regional Tests III, 1986 (Mean of 19 locations)

Variety	Yield	Maturity	Lodging	Height	Seed Quality	Seed Size	Composition	
							Protein	Oil
	(bu/A)	(data)	(score)[1]	(inches)	(score)[2]	g/100		
Sprite 87	49.9	9-20	1.6	21	1.8	16.7	39.0	22.0
Sprite	48.3	9-19	1.4	21	1.8	17.1	39.0	23.2

[1] 1 = erect, 5 = prostrate [2] 1 = very good, 5 = very poor

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (Glycine max L.)

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME
Ohio Agricultural Research and Development Center and USDA-ARS	HC Sprite BC	Sprite 87

ADDRESS *(Street and No., or R.F.D. No., City, State, and Zip Code)*
Ohio Agricultural Research and Development Center
Wooster, OH 44691

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PVPO NUMBER
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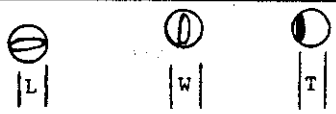
Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g., [0][9]). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:

[1]



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ **2. SEED COAT COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other *(Specify)* _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

[2] 1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ **4. SEED SIZE: (Mature Seed)**

[1][8] Grams per 100 seeds

★ **5. HILUM COLOR: (Mature Seed)**

[6] 1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other *(Specify)* _____

★ **6. COTYLEDON COLOR: (Mature Seed)**

[1] 1 = Yellow 2 = Green

★ **7. SEED PROTEIN PEROXIDASE ACTIVITY:**

[2] 1 = Low 2 = High

★ **8. SEED PROTEIN ELECTROPHORETIC BAND:**

[ ] 1 = Type A ($SP1^a$) 2 = Type B ($SP1^b$)

★ **9. HYPOCOTYL COLOR:**

[1] 1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ **10. LEAFLET SHAPE:**

[3] 1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other *(Specify)* _____

11. LEAFLET SIZE:

[2] 1 = Small ('Amsoy 71'; 'A5312') 2 = Medium ('Corsoy 79'; 'Gasoy 17')
3 = Large ('Crawford'; 'Tracy')

12. LEAF COLOR:

[3] 1 = Light Green ('Weber'; 'York') 2 = Medium Green ('Corsoy 79'; 'Braxton')
3 = Dark Green ('Gnome'; 'Tracy')

★ **13. FLOWER COLOR:**

[1] 1 = White 2 = Purple 3 = White with purple throat

★ **14. POD COLOR:**

[1] 1 = Tan 2 = Brown 3 = Black

★ **15. PLANT PUBESCENCE COLOR:**

[2] 1 = Gray 2 = Brown (Tawny)

16. PLANT TYPES:

[3] 1 = Slender ('Essex'; 'Amsoy 71') 2 = Intermediate ('Amcor'; 'Braxton')
3 = Bushy ('Gnome'; 'Govan')

★ **17. PLANT HABIT:**

[1] 1 = Determinate ('Gnome'; 'Braxton') 2 = Semi-Determinate ('Will')
3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

★ **18. MATURITY GROUP:**

[6] 1 = 000 2 = 00 3 = 0 4 = I 5 = II 6 = III 7 = IV 8 = V
9 = VI 10 = VII 11 = VIII 12 = IX 13 = X

★ **19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)**

BACTERIAL DISEASES:

★ [2] Bacterial Pustule *(Xanthomonas phaseoli* var. *sojensis)*

★ [0] Bacterial Blight *(Pseudomonas glycinea)*

★ [0] Wildfire *(Pseudomonas tabaci)*

FUNGAL DISEASES:

★ [0] Brown Spot *(Septoria glycines)*

Frogeye Leaf Spot *(Cercospora sojina)*

★ [0] Race 1 [0] Race 2 [0] Race 3 [0] Race 4 [0] Race 5 [0] Other *(Specify)* _____

[0] Target Spot *(Corynespora cassiicola)*

[2] Downy Mildew *(Peronospora trifoliorum* var. *manshurica)*

[0] Powdery Mildew *(Microsphaera diffusa)*

★ [0] Brown Stem Rot *(Cephalosporium gregatum)*

[0] Stem Canker *(Diaporthe phaseolorum* var. *caulivora)*

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

★ [0] Pod and Stem Blight *(Diaporthe phaseolorum* var; *sojae)*

[0] Purple Seed Stain *(Cercospora kikuchii)*

[0] Rhizoctonia Root Rot *(Rhizoctonia solani)*

Phytophthora Rot *(Phytophthora megasperma* var. *sojae)*

★ [2] Race 1 [2] Race 2 [2] Race 3 [2] Race 4 [2] Race 5 [2] Race 6 [2] Race 7

[2] Race 8 [2] Race 9 [2] Other *(Specify)* 10, 13, 14, 15, 17, 18, 21, 22 (contains Rps_1^k gene)

VIRAL DISEASES:

[0] Bud Blight (Tobacco Ringspot Virus)

[0] Yellow Mosaic (Bean Yellow Mosaic Virus)

★ [0] Cowpea Mosaic (Cowpea Chlorotic Virus)

[0] Pod Mottle (Bean Pod Mottle Virus)

★ [0] Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode *(Heterodera glycines)*

★ [1] Race 1 [1] Race 2 [1] Race 3 [1] Race 4 [ ] Other *(Specify)* _____

[0] Lance Nematode *(Hoplolaimus Colombus)*

★ [0] Southern Root Knot Nematode *(Meloidogyne incognita)*

★ [0] Northern Root Knot Nematode *(Meloidogyne Hapla)*

[0] Peanut Root Knot Nematode *(Meloidogyne arenaria)*

[0] Reniform Nematode *(Rotylenchulus reniformis)*

[0] OTHER DISEASE NOT ON FORM *(Specify):* _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

★ [1] Iron Chlorosis on Calcareous Soil

[ ] Other *(Specify)* _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

[1] Mexican Bean Beetle *(Epilachna varivestis)*

[1] Potato Leaf Hopper *(Empoasca fabae)*

[ ] Other *(Specify)* _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	Sprite	Seed Coat Luster	Sprite
Leaf Shape	Sprite	Seed Size	Sprite
Leaf Color	Sprite	Seed Shape	Sprite
Leaf Size	Sprite	Seedling Pigmentation	Sprite

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
Submitted	126	1.6	22	--	--	39.0	22.9	16.7	2.5
Sprite (Name of Similar Variety)	125	1.4	22	--	--	39.0	23.2	17.1	2.5

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A_2 in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

Sprite 87 Exhibit E

Basis of Ownership

Sprite 87 variety is considered jointly owned by the Ohio Agricultural Research and Development Center of The Ohio State University (OARDC-OSU) and the USDA, Agricultural Research Service (ARS). The basis for this position is (1) the six backcrosses to introduce the Rps_1^k gene for multiple race resistance to Phytophthora root rot into Sprite were made at the OARDC, Wooster, OH, from 1979 to 1981 by R. L. Cooper who is a Research Agronomist with the USDA-ARS and Adjunct Professor in the Department of Agronomy, OARDC-OSU (2) the homozygous resistant BC_6F_2-derived lines were evaluated by Dr. Cooper in 1983, 1984 and 1985 and similar lines were composited to from Breeder's Seed of Sprite 87 in 1986 and (3) the line (HC Sprite BC) was entered as an Ohio breeding line in Uniform Regional tests in 1986 without claims being made upon it. The seed supply was continuously under the control of OARDC-OSU and USDA-ARS until the spring of 1989 when seed will become publicly available after inspection and tagging as certified seed.

9000014

PLANT VARIETY PROTECTION OFFICE

Gentlemen:

Subject: Application No.
Variety and Kind: Soybean, 'Sprite 87'

As provided in section 83(a) of the Plant Variety Protection Act, 7 U.S.C. 2321, we request that the Certificate on the above variety be issued with a notation on the Certificate that the right to exclude others from selling, offering for sale, reproducing, importing or exporting the variety covered by this Certificate, or using it in producing a hybrid or different variety is waived, except that this waiver shall not apply to breeder's seed, foundation seed, labeling requirements, and blending limitations.

It has been agreed that the Certificate should be issued in the name(s) of:

Ohio Agricultural Research & Development Center, Ohio State University and USDA-ARS

May 3, 1989
(Date)

Richard L Cooper
(Signature)

9